

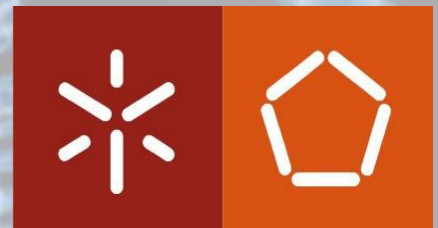


# i9MASKS

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# UV-C Sterilization for PDMS



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## Introduction

UV-C is a spectral range (between 200 nm and 280 nm) widely used for sterilization. Studies have shown that UV-C light can inactivate SARS-CoV-2 virus. Based on this, there is a need to verify if PDMS is not degraded by UV-C light exposure.

## Materials and methods

Firstly, wettability, transparency and mechanical assays were performed on PDMS samples, before and after UV-C exposure. PDMS practically does not absorb light above 250 nm, so it is expected that its mechanical properties will not be affected by a UV-C light at 280 nm.

Secondly, PDMS samples were placed in cultures of microalgae. Microalgae exhibit fluorescence when alive, so it is expected a decrease on fluorescence after UV-C sterilization. Two types of sterilization were performed: by UV-C light and by boiled water (100°C).

For the UV-C light exposure, a commercial sterilizer equipment, that emits 280 nm light, was used.



Spectrophotometer for transparency assay



Goniometer for wettability assay



Equipment for mechanical assay



UV-C sterilizer

## Results

Wettability and transparency assays results were not affected by UV-C light exposure. The mechanical assays could not be performed due to technical issues.

The microalgae culture used were already dead before UV-C exposure, so it was not possible to conclude about the effectiveness of the sterilizer equipment.

Full cleaning of PDMS was achieved after 2 min in boiled water, however the samples showed some turbidity.



Native PDMS sample



PDMS sample contaminated by microalgae



PDMS sample after sterilization in boiled water

## References

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